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# 110754 LVDS to DVI Converter Board

## Installation Manual

Revision -



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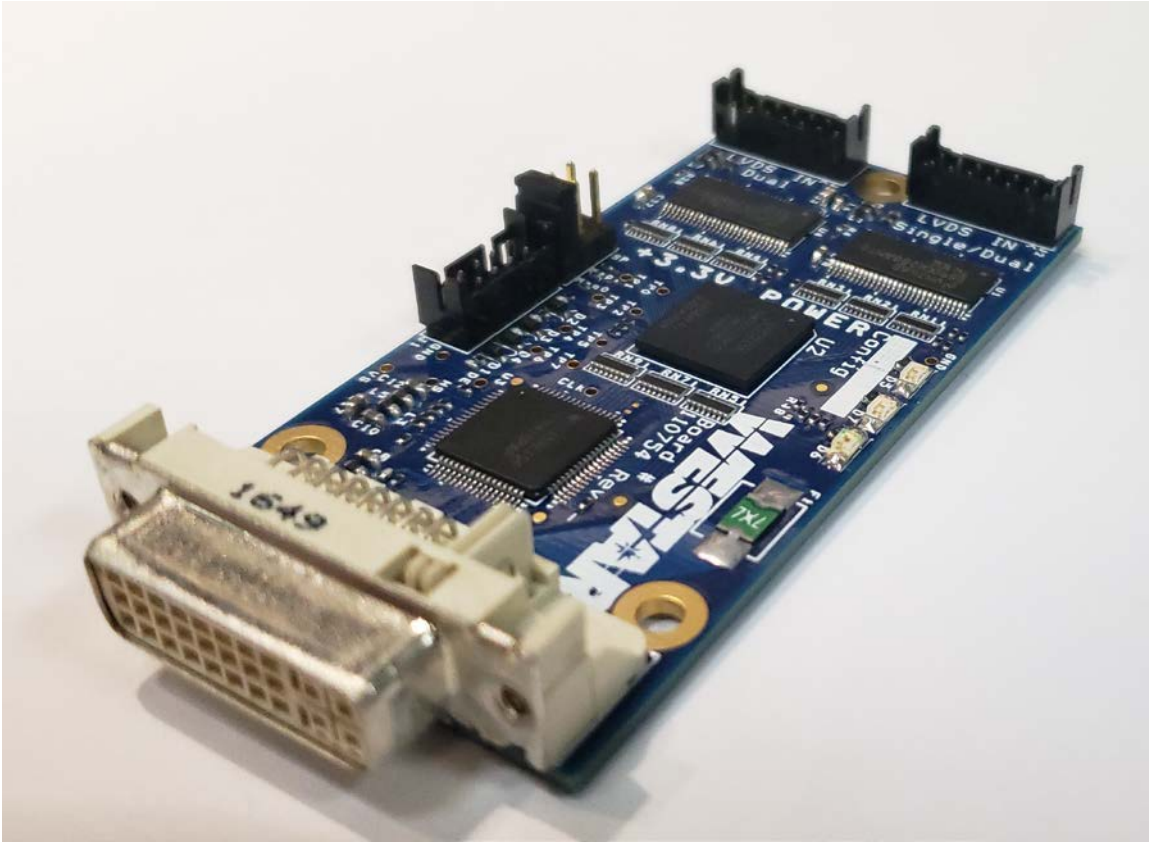
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## 1. OVERVIEW



**Figure 1 – LVDS to DVI Converter Board**

### 1.1 Introduction

The LVDS to DVI Converter Board accepts a single, 8 bit LVDS interface for pixel rates up to 85Mhz. It also accepts two 8 bit LVDS interfaces (sequential pixel format), for an equivalent bit rate of 170Mhz. The LVDS video is converted to DVI-D video. This video is generally used to drive a display device such as a computer or video monitor. The LVDS to DVI Converter Board must be powered by a 3.3V source and has 3 LED status indicators. A jumper is provided to select between SPWG and LDI bit mapping.

The purpose of this guide is to define the general interfaces required to install and operate the LVDS to DVI Converter Board. Adequate information will be supplied to permit the end user to integrate the LVDS to DVI Converter Board into a video system. If more detailed information is required, please contact our Technical Support.

## 1.2 Electro-Static Discharge (ESD) Warning



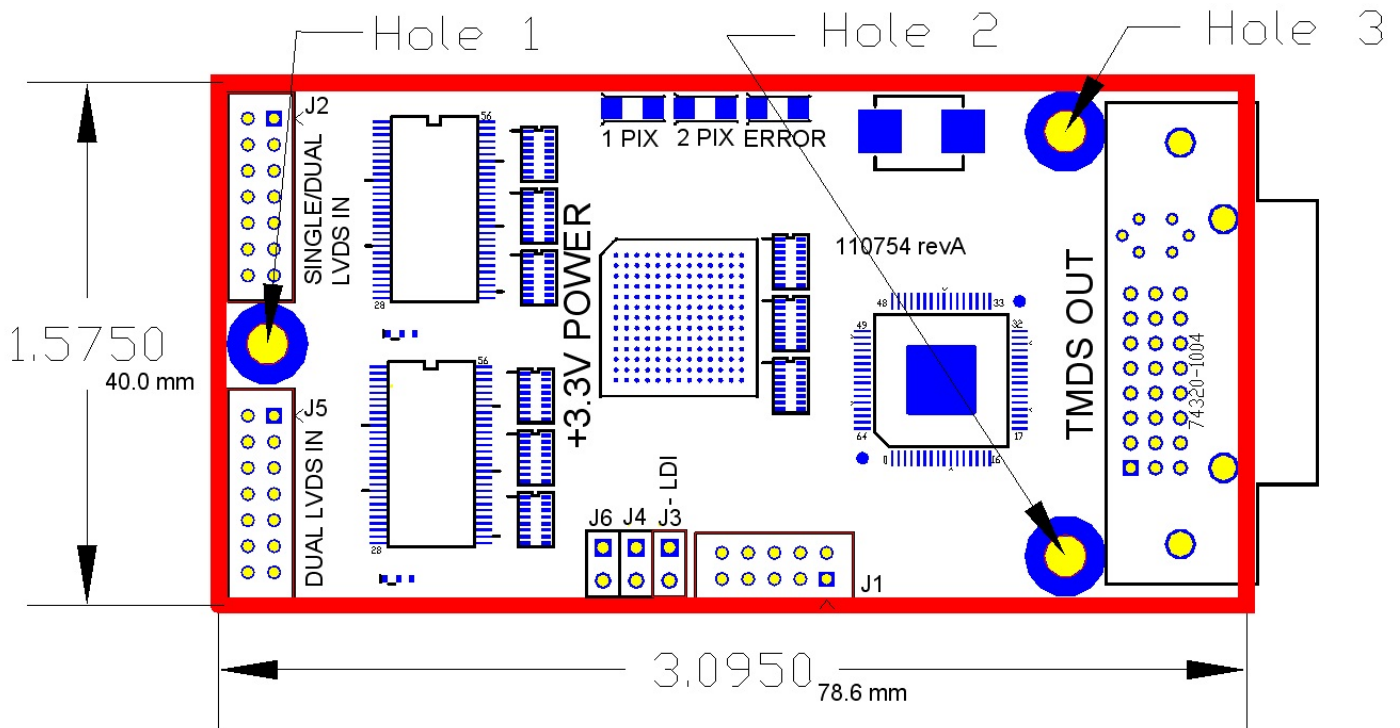
When handling circuit cards, please keep the following in mind:

Electronic components on printed circuit boards are extremely sensitive to static electricity. Static electricity is generated by clothing or by the rubbing (or separation) of items such as transparent tape or styrofoam. The static electricity can generate a field potential strong enough to cause damage to electronic components. It is recommended that when handling the LVDS to DVI Converter Board that you observe the ESD precautions by utilizing an anti-static grounding strap and selecting an ESD-safe work area.

## 2. MECHANICAL SPECIFICATIONS

### 2.1 LVDS to DVI Converter Board Diagram

The following figure defines the physical dimensions and mounting hole locations for the LVDS to DVI Converter Board. It will also be used throughout this guide to locate the connectors and jumpers used on the LVDS to DVI Converter Board. Various CAD models are available. Please contact the factory for more information.



Hole 1 - 0.148, 0.787 (3.75, 20 mm)  
 Hole 2 - 2.549, 0.148 (64.75, 3.75 mm)  
 Hole 3 - 2.549, 1.427 (64.75, 36.25 mm)  
 Holes are 0.125 (3.175mm) diameter

**Figure 2 – LVDS to DVI Converter Board Dimensions and Component Location**

### 3. INTERFACE DESCRIPTION

#### 3.1 Signal Type

The various input and output signals from the LVDS to DVI Converter Board fall under one of the following categories:

Signal Type	Signal Description
PI	Power Input
PO	Power Output
G	Ground
TM	TMDS Video Output
DI	LVDS Input

#### 3.2 LED Status

Three LEDs on the LVDS to DVI Converter Board indicate video status. When the “1 PIX” LED is illuminated a single lane LVDS source has been detected. When the “2 PIX” LED is illuminated a dual lane source has been detected. The “ERR” LED illuminates when an error condition has occurred.

#### 3.3 Power/LVDS Video Input

Connector J2 of the LVDS to DVI Converter Board is the interface for the single lane 8-bit LVDS RGB video source or the primary lane of a dual lane 8-bit LVDS RGB video source. This interface accepts the power and the LVDS pixel data from the video source. When being driven by a VP14, the LVDS to DVI Converter Board J2 connects to VP14, J33 with a one-to-one cable. The wires on opposing pins should be twisted (eg: pins 1 & 2, pins 3 & 4 and so on). The LVDS to DVI Converter Board requires 3.3V power over J2 pins 13 and 14. When connected to a VP14, the VP14 J9 jumper should be set for FPD power = 3.3V (short J9 pins 1-2). The following table identifies the pin-outs for connector J2:

CONNECTOR J2 PIN-OUTS						
Pin	Description	Type		Pin	Description	Type
1	RxAIN3+	DI		2	RxAIN3-	DI
3	RxACLK+	DI		4	RxACLK-	DI
5	RxAIN2+	DI		6	RxAIN2-	DI
7	RxAIN1+	DI		8	RxAIN1-	DI
9	RxAIN0+	DI		10	RxAIN0-	DI
11	Ground	G		12	Ground	G
13	Power Input	PI		14	Power Input	PI

Board Connectors: DF11-14DP-2DSA (Hirose)

Mate Connectors: DF11-14DS-2C (Hirose)

Contact: DF11-2428SC (Hirose)

Connector J5 of the LVDS to DVI Converter Board is the interface for the secondary lane of a dual lane 8-bit LVDS RGB video source when operating at pixel rates above 85Mhz. This interface accepts the power and the LVDS pixel data from the video source. When being driven by a VP14, the LVDS to DVI Converter Board J5 connects to VP14, J32 with a one-to-one cable. The wires on opposing pins should be twisted (eg: pins 1 & 2, pins 3 & 4 and so on). The LVDS to DVI Converter Board requires 3.3V power over J2 pins 13 and 14. When connected to a VP14, the VP14 J9 jumper should be set for FPD power = 3.3V (short J9 pins 1-2). The following table identifies the pin-outs for connector J5:

CONNECTOR J5 PIN-OUTS						
Pin	Description	Type		Pin	Description	Type
1	RxBIN3+	DI		2	RxBIN3-	DI
3	RxBCLK+	DI		4	RxBCLK-	DI
5	RxBIN2+	DI		6	RxBIN2-	DI
7	RxBIN1+	DI		8	RxBIN1-	DI
9	RxBIN0+	DI		10	RxBIN0-	DI
11	Ground	G		12	Ground	G
13	Power Input	PI		14	Power Input	PI

Board Connectors: DF11-14DP-2DSA (Hirose)  
 Mate Connectors: DF11-14DS-2C (Hirose)  
 Contact: DF11-2428SC (Hirose)

### 3.4 LVDS Bit Mapping

The LVDS to DVI Converter Board can either map the pixel data according to the LDI or SPWG specification. The following table identifies the jumper selections for connector J3:

CONNECTOR J3 PIN-OUTS	
Pins	Description
1-2 Shorted	LDI Bit Mapping
1-2 Open	SPWG Bit Mapping

Mate Shunt: SNT-100-BK-G (Samtec)



### 3.5 Video Output

Connector P1 of the LVDS to DVI Converter Board is a standard DVI-I connector. The DVI-D video is output via this connector. The following table identifies the pin-outs for connector P1:

CONNECTOR P1 PIN-OUTS						
Pin	Description	Type		Pin	Description	Type
1	Data 2-	TM		2	Data 2+	TM
3	Data 2 Shield	G		4	n/c	
5	n/c			6	n/c	
7	n/c			8	n/c	
9	Data 1-	TM		10	Data 1+	TM
11	Data 1 Shield	G		12	n/c	
13	n/c			14	+3.3V	PO
15	Ground	G		16	n/c	
17	Data 0-	TM		18	Data 0+	TM
19	Data 0 Shield	G		20	n/c	
21	n/c			22	Clock Shield	G
23	Clock+	TM		24	Clock-	TM
C1	n/c			C2	n/c	
C3	n/c			C4	n/c	
C5	Ground	G				

### 3.6 Other Connectors

The J1 connector is for factory use only.  
The J4 and J6 jumpers are for future use.

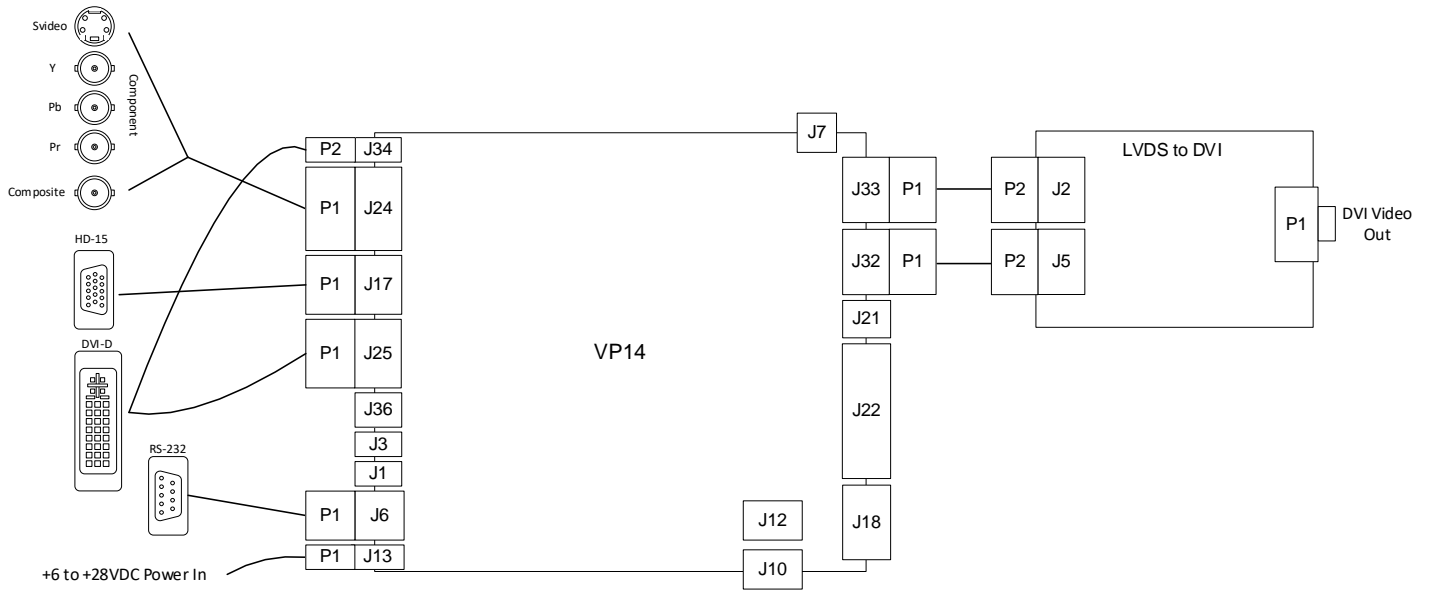
#### 4. POWER REQUIREMENTS

The LVDS to DVI Converter Board operates from a single DC supply. Power is input through connector J2 and/or J5 pins 13 and 14 (or the J5 connector). It requires +3.3VDC for proper operation.

Supply Voltage	Current Required
+3.3VDC	100 mA

Voltage Tolerances: +/- 5%

## APPENDIX A – TYPICAL CONNECTIONS



**Figure 3 – VP14 with LVDS to DVI Converter Board**